arise and that a progressive and ever-improving concern would be the result. There was a great deal in what Dr. Nichols said in his presidential address to the Society of Chemical Industry—the quotation is from memory—"Never put up duplicate plant; no plant is so perfect that it cannot be improved; after a plant has been in use a short time certain points in which it may be improved are sure to be discovered."

So if we are to compete with foreign competition no process should be worked year after year by rule of thumb, otherwise manufacturers will find their product being pushed out of the market by a similar but improved product in which the brain has been the motive power for the thumb.

It is very much to be hoped that now that the matter has been thoroughly threshed out the Government will step in and—while safeguarding its own interests and the sobriety of the workers—it will aid manufacturers by all means in its power by enabling them to use a class of alcohol which will be suitable to their special needs.

F. MOLLWO PERKIN.

THE GEOLOGY OF SOUTH AFRICA.[1]

TOWARDS the end of last century it appeared as if England had lost her well earned supremacy in geological research in Africa. In Germany, elaborate treatises dealing sometimes with her own African colonies exclusively, and sometimes with that of neighbouring British territory, monthly and almost weekly appeared. French geologists, too, produced essay after essay on their African colonies and possessions. Meanwhile, England was apparently content to lag behind.

It is fitting that the visit of the British Association to one of our most famous and most remote African colonies this year should witness the publication of two geological works, of the highest scientific standing, written by our own countrymen. Early this year, the comprehensive treatise by Mr. A. W. Rogers on the geology of Cape Colony made its appearance. Now, a few months later, we have presented to us the philosophic *résumé* of the geology of South Africa as a whole by Messrs. Hatch and Corstorphine.

Both volumes supply a long-felt want. In their method and conciseness both are equally British.

In a work treating with the richly metalliferous regions of the Transvaal it might have been expected that questions of economic interest would occupy many pages. It is an agreeable surprise to find that this is not the case. On the contrary, the geology of South Africa is here described in a thoroughly scientific manner, clearly and concisely worded. All essential details are brought within a compass of 312 pages of text.

In the opening chapter, on the history of research, ample recognition is given to A. G. Bain, the father of South African geology, and also to Stow. More recent workers cannot complain that their investigations have been neglected.

The book is divided into five parts. Part i. deals with the pre-Karroo rocks, in which those of southern Cape Colony are described in section i., and those of northern Cape Colony, the Transvaal, &c., in section ii. This separation into sections becomes necessary owing to the want of similarity in the succession of the pre-Cape rocks in the two regions.

The authors naturally give somewhat more space to the sequence in the Transvaal, more especially to a description of the upper division of the Witwatersrand system, which includes the famous "Banket." It is interesting to find that the stratigraphical position and age of this well known deposit remain unsolved, except that the authors consider the age to be vastly newer than the Archæan rocks and greatly older than the Table Mountain Sandstone.

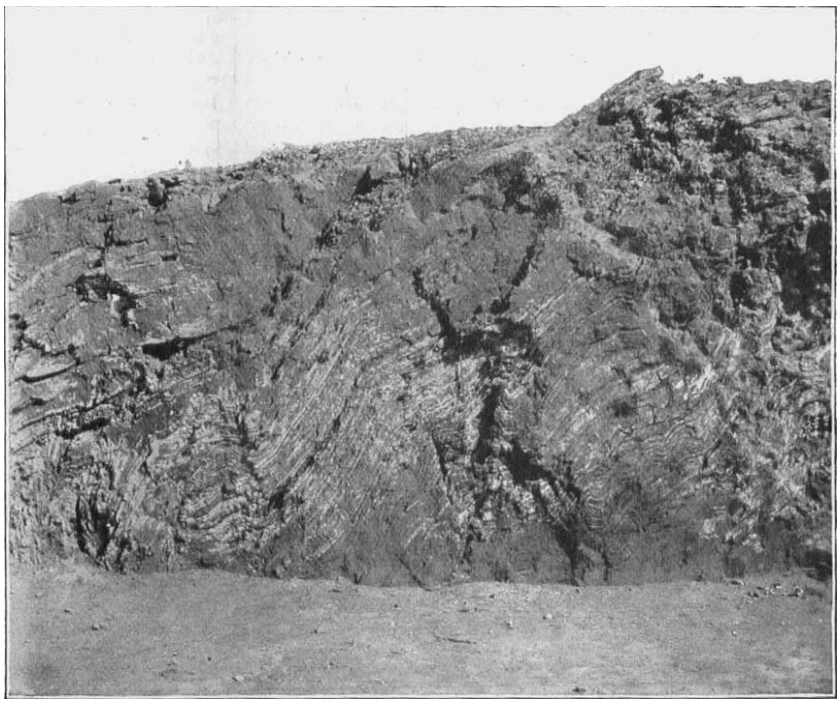

FIG. 1.—Contorted Band, Hospital Hill Slate, Show Yard, Johannesburg. From "The Geology of South Africa," by F. H. Hatch and G. S. Corstorphine.

The complicated nature of the stratigraphy of South Africa, other than that of the peninsula, will be gathered from the following tables:—

North of Cape Colony	Transvaal
Dwyka Conglomerate	Dwyka Conglomerate
Unconformity	*Unconformity*
Matsap Series	Waterberg Series
Unconformity	*Unconformity*
Griqua Town,	Pretoria Series
Campbell Rand and Keis Series	Dolomite and Black Reef Series
Unconformity	*Unconformity*
Volcanic Series	Ventersdorp Series
Unconformity	*Unconformity*
	Witwatersrand Series
	Unconformity
Namaqualand Series	Swaziland Series

This table opens up a vista of infinite possibilities.

The Karroo rocks are adequately dealt with in part ii., but in this and elsewhere Rhodesia,

[1] "The Geology of South Africa." By F. H. Hatch and G. S. Corstorphine. Pp. xiv+336. (London: Macmillan and Co., Ltd., 1905.) Price 21s. net.

Bechuanaland, and Natal receive scant notice. The coastal system, including the Uitenhage and Umtavuna Cretaceous rocks, profusely illustrated with typical fossils, occupies part iii.

The superficial deposits, somewhat summarily dismissed, form a separate chapter. Many of the interesting problems connected with them are not even hinted at. A classification by chemical composition is adopted.

The igneous and volcanic rocks, which take so large a share in South African stratigraphy, are described in connection with the systems with which they are more intimately associated.

Part iv. briefly discusses the igneous rocks of doubtful position. Too much space has here been allotted to the diamond-bearing deposits.

Part v. discusses the correlation of the South African strata. It contains much information guardedly expressed. This portion possesses the almost unique virtue of stating the arguments in favour of the correlation adopted by the authors. Few geologists will now dissent from the view that the Witwatersrand series is older than the Table Mountain Sandstone and newer than the complex of rocks termed Archæan.

Latter-day geologists will miss a chapter on structural and dynamical geology. The authors, and many will no doubt agree with them, have eschewed the problems entailing the use of modern physiographical and dynamical terminology. In dealing with rocks and fossils they have, however, occasionally been compelled to drop into technical language. Thus we met with *Cardium bullen-newtoni, Eriphyla rupert-jonesi* among fossils; while among minerals and rocks several of those mentioned wordily lengthen out what, to the general reader, would otherwise be a welcome page.

The authors have certainly succeeded in their self-imposed task "to correlate and systematise the valuable results of both official and private work." They are right in considering that what we know of South African geology lacks coherence. The best efforts, such as that of the authors, must for a long time be regarded as tentative and by no means final.

The volume is profusely and admirably illustrated with photographs of scenery and rock sections. Two coloured geological maps accompany the text, one of South Africa between Bechuanaland and the east coast and the Transvaal and the south coast, and one of the Transvaal. It is to be hoped that the half-mourning adopted for the Karroo system will not be perpetuated. Economically it is false; artistically it is ruinous. W. G.

NOTES.

THE meeting of the French Association for the Advancement of Science was opened on August 3 at Cherbourg under the presidency of Prof. Giard.

WE regret to learn that Prof. L. Errera, professor of botany in the University of Brussels, and member of the Royal Academy of Belgium, died on August 1 at Uccle.

WE understand that the editorship of the "Fauna of British India," rendered vacant by the death of Dr. W. T. Blanford, has been offered by the Secretary of State for India to Lieut.-Colonel C. T. Bingham.

A REUTER telegram from Rio de Janeiro says that the Latin American Scientific Congress was opened on August 7, delegates from all the South American Republics being present.

THE sixth International Congress of Criminal Anthropology is to take place in Turin on April 26 next under the presidency of Signor Bianchi, Minister of Public Instruction.

PROF. RONALD ROSS and Prof. Boyce, of the Liverpool School of Tropical Medicine, will sail for New Orleans on Saturday to assist in dealing with the epidemic of yellow fever in that city.

WE regret to see the announcement that Mr. Alexander Bell, father of Dr. Alexander Graham Bell, and an active worker in educational science, especially in relation to the study of deaf-mutes, died at Washington on August 6.

MR. CHRISTOPHER HEATH, Emeritus professor of clinical surgery in University College, London, and a former president of the Royal College of Surgeons of England, died suddenly on Tuesday, August 8. Mr. Heath was the author of several standard works on surgical subjects.

THE Amherst College expedition for the observation of the eclipse of the sun on August 30 has departed for Tripoli, where the instruments will be mounted on the edge of the desert. The members of the expedition are Prof. David Todd, Mrs. and Miss Todd, and Mr. E. A. Thompson, and their attention will be chiefly devoted to the photography of the corona and of intra-Mercurial planet regions.

THE Treasury has renewed for a further period of five years the annual grant of 500*l.* to the British School at Athens. The promoters of the movement hope that an influentially signed petition for a similar grant to the British School at Rome may be also favourably considered.

PROF. GUIDO CORA informs us that the earthquake disturbances registered at the Pola Hydrographic Station on July 23 (see p. 298) were also recorded at the Osservatorio Ximeniano of Florence at 3.50 a.m. on the same date. Father Guido Alfani, from an examination of the seismograms, expressed the opinion that a severe and protracted earthquake must have taken place at an estimated distance of about 6800 kilometres (4225 miles).

WE notice with regret the death on July 26 of Prof. Bichat, dean of the faculty of sciences at the University of Nancy. Prof. Bichat was also director of the Electrotechnical Institute of Nancy, and took a very active part in all efforts for the improvement of secondary and higher education.

THE research fellowship in chemistry offered by the Worshipful Company of Salters, and tenable in the research laboratory of the Pharmaceutical Society, has this year been awarded to Miss Nora Renouf, who has been engaged in research work for the past two years in the society's laboratories. The Salters' fellowship is of the annual value of 100*l.*, and was founded with the view of encouraging the application of the newest methods of scientific chemistry to the elucidation of pharmacological problems.

THE International Congress of Anatomy was opened in the morning of August 7 at Geneva. Three hundred representatives of the principal universities of Europe and America were present, including office-bearers of the five great anatomical associations of Great Britain, France, Germany, Italy, and the United States. One hundred and fifteen papers on various scientific subjects were put down for reading. The congress will conclude to-day with a banquet given by the city of Geneva to the delegates. The congress has accepted an invitation to assemble at Boston in 1907.